

**AMENDMENTS TO THE CLAIMS:**

Please amend the claims as follows:

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1. (Canceled)

2. (Canceled)

3. (Canceled)

4. (Canceled)

5. (Canceled)

6. (Canceled)

7. (Canceled)

8. (Canceled)

9. (Canceled)

10. (Canceled)

11. (Canceled)

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12. (Canceled)

13. (Currently Amended) A computer-readable medium encoded with a computer program product for method of analyzing test data obtained from an aeroelastic structure, the computer program product method comprising:

a first computer program portion configured to read reading a plurality of data points, each data point representing a motion at a location on the aeroelastic structure;

a second computer program portion configured to perform performing a linear transfer function frequency response curve fit to the plurality of data points to obtain an initial curve fit condition; and

a third computer program portion configured to perform performing at least one non-linear transfer function frequency response curve fit to the plurality of data points, wherein the third computer program portion is further configured to perform at least one non-linear optimization curve fit to the plurality of data points using a Jacobian matrix populated using analytically-derived sensitivities based on at least one of a State Space Model and a Pole Zero Model.

14. (Currently Amended) The computer-readable medium method of Claim 13, wherein reading a plurality of data points includes reading a plurality of flutter test data points.

15. (Canceled)

16. (Canceled)

17. (Canceled)

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18. (Currently Amended) The computer-readable medium of Claim 13, further comprising a fourth computer program portion configured to assess assessing an adequacy of the non-linear optimization curve fit.

19. (Currently Amended) A computer-readable medium encoded with a computer program product for analyzing test data, the computer program product comprising:

a first computer program portion configured to read a plurality of data points, each data point representing a motion at a location;

a second computer program portion configured to perform a closed form fit to the plurality of data points to obtain an initial curve fit condition; and

a third computer program portion configured to perform at least one non-linear transfer function frequency response curve fit to the plurality of data points, wherein the third computer program portion is further configured to perform at least one non-linear optimization curve fit to the plurality of data points using a Jacobian matrix populated using analytically-derived sensitivities based on at least one of a State Space Model and a Pole Zero Model.

20. (Currently Amended) The computer-readable medium computer program product of Claim 19, wherein plurality of flutter test data points are acquired using a plurality of sensors.

21. (Currently Amended) The computer-readable medium computer program product of Claim 19, wherein the first computer program portion is further configured to read a plurality of flutter test data points acquired using a plurality of sensors.

22. (Canceled)

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23. (Currently Amended) The computer-readable medium computer program product of Claim 19, wherein the third computer program portion is further configured to perform at least one non-linear optimization curve fit to the plurality of data points using a Jacobian matrix populated using analytically-derived sensitivities that are computed directly from the plurality of data points.

24. (Canceled)

25. (Canceled)

26. (Currently Amended) The computer-readable medium computer program product of Claim 19, further including a fourth computer program portion configured to assess an adequacy of the non-linear optimization curve fit.

27. (Currently Amended) The computer-readable medium computer program product of Claim 19, wherein the third computer program portion is further configured to determine a number of modes to include in the at least one non-linear optimization curve fit to the plurality of data points.

28. (Currently Amended) The computer-readable medium computer program product of Claim 19, wherein further including a fourth computer program portion configured to transform the plurality of data points into a State Space Model.

29. (Currently Amended) The computer-readable medium computer program product of Claim 19, wherein further including a fourth computer program portion configured to transform the plurality of data points into a Pole Zero Model.

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30. (Currently Amended) A system for analyzing flutter test data, comprising:

- a control component;
- an input/output device devise coupled to receive a plurality of data points; and
- a processor arranged to analyze the plurality of data points, the processor including:
  - a first component configured to read the plurality of data points, each data point representing a value at a location;
  - a second component configured to perform a closed form fit to the plurality of data points to obtain an initial curve fit condition; and
  - a third component configured to perform at least one non-linear transfer function frequency response curve fit to the plurality of data points, wherein the third component is further configured to perform at least one non-linear optimization curve fit to the plurality of data points using a Jacobian matrix populated using analytically-derived sensitivities based on at least one of a State Space Model and a Pole Zero Model.

31. (Currently Amended) The system of Claim 30, wherein the input/output device devise is coupled to received a plurality of data points, the plurality of data points including a plurality of flutter test data points.

32. (Original) The system of Claim 30, wherein the third component is further configured to perform at least one non-linear optimization curve fit to the plurality of data points using a Jacobian matrix populated using analytically-derived sensitivities.

33. (Original) The system of Claim 30, wherein the third component is further configured to perform at least one non-linear optimization curve fit to the plurality of data points using a

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Jacobian matrix populated using analytically-derived sensitivities that are computed directly from the plurality of data points.

34. (Canceled)

35. (Canceled)

36. (Original) The system of Claim 30, wherein the processor includes a fourth component configured to assess an adequacy of the non-linear optimization curve fit.

37. (Original) The system of Claim 30, wherein at least one of the first, second, and third components is further configured to determine a number of modes to include in the at least one non-linear optimization curve fit to the plurality of data points.

38. (Currently Amended) A system for analyzing flutter test data, comprising: The system of Claim 30, wherein the processor includes

a control component;

an input/output device coupled to receive a plurality of data points; and

a processor arranged to analyze the plurality of data points, the processor including:

a first component configured to read the plurality of data points, each data point representing a value at a location;

a second component configured to perform a closed form fit to the plurality of data points to obtain an initial curve fit condition;

a third component configured to perform at least one non-linear transfer function frequency response curve fit to the plurality of data points; and

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a fourth component configured to transform the plurality of data points into at least one of a State Space Model and a Pole Zero Model.

39. (Canceled)

40. (Currently Amended) The system of Claim 38 30, wherein the input/output device devise is coupled to received a plurality of data points, the plurality of data points including a first plurality of test data points from a first test sensor, and a second plurality of test data points from a second test sensor.

41. (Currently Amended) The system of Claim 38 30, further including a memory component operatively coupled to at least one of the control component, the input/output device, and the processor.

42. (Currently Amended) The system of Claim 38 30, further including a data acquisition component operatively coupled to at least one of the control component, the input/output device, and the processor.

43. (Original) The system of Claim 42, wherein the data acquisition component includes a plurality of data acquisition sensors.

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